



IN THE CLAIMS:

1. (Original) A method of manufacturing at least portion of a micro-reactor comprising:
providing a plurality of metal foil layers;
forming a plurality of metal foil layers into specific shapes by use of at least one lithographic technique;
stacking and aligning said plurality of formed metal layers;
connecting together said plurality of formed metal layers to form said portion of said micro-reactor.
2. (Original) The method as defined in claim 1, wherein a plurality of said metal foil layers are formed of a catalyst metal.
3. (Original) The method as defined in claim 1, wherein a plurality of said metal foil layers each have an average thickness less than about 400 microns.
4. (Original) The method as defined in claim 1, wherein said at least one lithographic technique includes photo-etching.
5. (Original) The method as defined in claim 1, wherein said step of forming includes the formation of at least one alignment opening in at least one metal foil layer.
6. (Original) The method as defined in claim 5, wherein said step of stacking and

aligning includes the use of at least one alignment opening formed in a plurality of metal foil layers.

7. (Original) The method as defined in claim 1, wherein said step of connecting together includes brazing together a plurality of metal foil layers.

8. (Original) The method as defined in claim 7, including the step of coating at least one side of a plurality of metal foil layers with a brazing metal.

9. (Original) The method as defined in claim 7, wherein said brazing metal has an average coating thickness of less than about 10 microns.

10. (Original) The method as defined in claim 7, wherein said step of brazing includes vacuum brazing.

11. (Original) The method as defined in claim 1, including the step of generating a computer image of a plurality of said formed metal foil layers.

12. (Original) The method as defined in claim 1, including the step of generating a computer image of said portion of said micro-reactor and then sectioning said computer image of said portion of said micro-reactor into a plurality of sectional images that correspond to a plurality of said formed metal foil layers.

13. (Original) The method as defined in claim 12, including the step of forming at least

one mask from at least one of said computer images and at least partially forming at least one of said formed metal foil layers using said mask.

14. (Original) The method as defined in claim 12, including the step of forming at least one mask from at least one of said sectional images and at least partially forming at least one of said formed metal foil layers using said mask.

Claims 15-18 (Canceled).

19. (New) A method of manufacturing at least portion of a micro-reactor comprising:
selecting a micro-reactor shape having at least one passageway in said micro-reactor, said at least one passageway adapted to allow flow of at least one reactant through at least a portion of said micro-reactor;

generating a computer image of a plurality of metal foil layers, a plurality of said metal foil layers including an opening that at least partially forms at least one passageway in said micro-reactor;

forming a plurality of metal foil layers into specific shapes by use of at least one lithographic technique based at least partially on said generated computer image;

stacking and aligning said plurality of formed metal layers, said metal foil layers being stacked and aligned to at least partially orient at least one opening in a plurality of said metal foil layers to at least partially form said at least one passageway in said micro-reactor; and,

connecting together said plurality of formed metal layers to form at least a portion of said micro-reactor.

20. (New) The method as defined in claim 19, wherein a plurality of said metal foil layers has a thickness of less than about 400 microns.

21. (New) The method as defined in claim 19, wherein said opening in said metal foil layer has a maximum cross-sectional width of about 5000 microns.

22. (New) The method as defined in claim 20, wherein said opening in said metal foil layers has a maximum cross-sectional width of about 5000 microns.

23. (New) The method as defined in claim 19, wherein said at least one passageway in said micro-reactor includes a catalyst.

24. (New) The method as defined in claim 22, wherein said at least one passageway in said micro-reactor includes a catalyst.

25. (New) The method as defined in claim 23, wherein at least a portion of a wall of said passageway is formed of said catalyst.

26. (New) The method as defined in claim 24, wherein at least a portion of a wall of said passageway is formed of said catalyst.

27. (New) The method as defined in claim 25, wherein at least one of said metal foil layers includes a catalyst metal, said catalyst metal at least partially promoting a reaction of said at

least one reactant.

28. (New) The method as defined in claim 19, wherein a plurality of metal foil layers are connected together by a brazing metal, said brazing metal having a different composition from said metal foil layer.

29. (New) The method as defined in claim 26, wherein a plurality of metal foil layers are connected together by a brazing metal, said brazing metal having a different composition from said metal foil layer.

30. (New) The method as defined in claim 28, wherein said brazing metal has an average coating thickness of less than about 10 microns.

31. (New) The method as defined in claim 28, wherein said step of brazing includes vacuum brazing.

32. (New) The method as defined in claim 19, wherein said step of aligning said plurality of metal foil layers includes aligning at least one alignment opening in said metal foil layer with another alignment opening in another metal foil layer.

33. (New) The method as defined in claim 29, wherein said step of aligning said plurality of metal foil layers includes aligning at least one alignment opening in said metal foil layer with another alignment opening in another metal foil layer.

34. (New) The method as defined in claim 19, wherein a plurality of metal foil layers includes at least two openings to form a plurality of passageways in said micro-reactor.

35. (New) The method as defined in claim 33, wherein a plurality of metal foil layers includes at least two openings to form a plurality of passageways in said micro-reactor.